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Brocade 5300

Hardware Reference Manual

BROCADE

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<i>Brocade 5300 Hardware Reference Manual</i>	53-1000858-02	Document update	July 2008

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How this document is organized

This document is organized to help you find the information that you want as quickly and easily as possible.

The document contains the following components:

- [Chapter 1, “Brocade 5300 Introduction,”](#) provides an overview of the Business Continuity Manager switch, a feature list, and a look at the appearance of the switch.
- [Chapter 2, “Brocade 5300 Installation and Configuration,”](#) provides the information needed to install the switch into your network.
- [Chapter 3, “Brocade 5300 Operation”](#) discusses the day-to-day operational procedures for using the switch.
- [Appendix A, “Brocade 5300 Specifications”](#) provides tables of physical, environmental, and general specifications, helpful for quick lookup.
- The index points you to the exact pages on which specific information is located.

Supported hardware and software

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc. for Fabric OS v6.1.0, documenting all possible configurations and scenarios is beyond the scope of this document.

This document is specific to the Product Name and Fabric OS v6.1.0. To obtain information about a Fabric OS version other than v6.1.0, see the documentation specific to that OS version.

What's new in this document

Corrections have been made to the original document.

Document conventions

This section describes text formatting conventions and important notice formats used in this document.

Text formatting

The narrative-text formatting conventions that are used are as follows:

bold text	Identifies command names Identifies the names of user-manipulated GUI elements Identifies keywords and operands Identifies text to enter at the GUI or CLI
<i>italic text</i>	Provides emphasis Identifies variables Identifies paths and Internet addresses Identifies document titles
<code>code text</code>	Identifies CLI output Identifies command syntax examples

For readability, command names in the narrative portions of this guide are presented in mixed lettercase: for example, switchShow. In actual examples, command lettercase is often all lowercase. Otherwise, this manual specifically notes those cases in which a command is case sensitive.

Command syntax conventions

Command syntax in this manual follows these conventions:

command	Commands are printed in bold.
--option, option	Command options are printed in bold.
-argument, arg	Arguments.
[]	Optional element.
<i>variable</i>	Variables are printed in italics. In the help pages, values are <u>underlined</u> or enclosed in angled brackets < >.
...	Repeat the previous element, for example “member[;member...]”
value	Fixed values following arguments are printed in plain font. For example, --show WWN
	Boolean. Elements are exclusive. Example: --show -mode egress ingress

Notes, cautions, and warnings

The following notices and statements are used in this manual. They are listed below in order of increasing severity of potential hazards.

NOTE

A note provides a tip, guidance or advice, emphasizes important information, or provides a reference to related information.

ATTENTION

An Attention statement indicates potential damage to hardware or data.



CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you.



DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Key terms

For definitions specific to Brocade and Fibre Channel, see the *Brocade Glossary*.

For definitions of SAN-specific terms, visit the Storage Networking Industry Association online dictionary at:

<http://www.snia.org/education/dictionary>

Notice to the reader

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These references are made for informational purposes only.

Corporation	Referenced Trademarks and Products
IBM Corporation	IBM, FICON, PowerPC

Additional information

This section lists additional Brocade and industry-specific documentation that you might find helpful.

Brocade resources

To get up-to-the-minute information, join Brocade Connect. It's free! Go to <http://www.brocade.com> and click **Brocade Connect** to register at no cost for a user ID and password.

For practical discussions about SAN design, implementation, and maintenance, you can obtain *Building SANs with Brocade Fabric Switches* through:

<http://www.amazon.com>

For additional Brocade documentation, visit the Brocade SAN Info Center and click the Resource Library location:

<http://www.brocade.com>

Release notes are available on the Brocade Connect Web site and are also bundled with the Fabric OS firmware.

Other industry resources

- White papers, online demos, and data sheets are available through the Brocade Web site at <http://www.brocade.com/products/software.jhtml>.
- Best practice guides, white papers, data sheets, and other documentation is available through the Brocade Partner Web site.

For additional resource information, visit the Technical Committee T11 Web site. This Web site provides interface standards for high-performance and mass storage applications for Fibre Channel, storage management, and other applications:

<http://www.t11.org>

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association Web site:

<http://www.fibrechannel.org>

Getting technical help

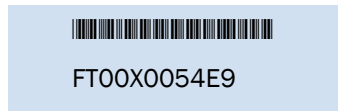
Contact your switch support supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information available:

1. General Information

- Switch model
- Switch operating system version
- Error numbers and messages received
- **supportSave** command output
- Detailed description of the problem, including the switch or fabric behavior immediately following the problem, and specific questions
- Description of any troubleshooting steps already performed and the results
- Serial console and Telnet session logs
- syslog message logs

2. Switch Serial Number

The switch serial number and corresponding bar code are provided on the serial number label, as illustrated below.:



The serial number label is located as follows:

- *Brocade 200E*—On the non-port side of the chassis
- *Brocade 300, 4100, 4900, 5100, 5300, 7500, and Brocade Encryption Switch*—On the switch ID pull-out tab located inside the chassis on the port side on the left
- *Brocade 5000*—On the switch ID pull-out tab located on the bottom of the port side of the switch
- *Brocade 7600*—On the bottom of the chassis
- *Brocade 48000*—Inside the chassis next to the power supply bays
- *Brocade DCX*—On the bottom right on the port side of the chassis

3. World Wide Name (WWN)

Use the **wwn** command to display the switch WWN.

If you cannot use the **wwn** command because the switch is inoperable, you can get the WWN from the same place as the serial number, except for the Brocade DCX. For the Brocade DCX, access the numbers on the WWN cards by removing the Brocade logo plate at the top of the non-port side of the chassis.

Document feedback

Quality is our first concern at Brocade and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to:

documentation@brocade.com

Provide the title and version number of the document and as much detail as possible about your comment, including the topic heading and page number and your suggestions for improvement.

Brocade 5300 Introduction

In this chapter

• Brocade 5300 overview	1
• Port side of the Brocade 5300	2
• Non-port side of the Brocade 5300	3
• Ports on Demand license	4
• Brocade Inter-Switch Link (ISL) Trunking	5

Brocade 5300 overview

The Brocade 5300 is an 80-port 1, 2, 4, or 8 Gbps Fibre Channel switch that delivers Brocade sixth generation ASIC technology and architecture for Fibre Channel Storage Area Networks (SANs). The Brocade 5300 is designed for the needs of enterprise environments that require a high-port footprint for port aggregation.

With its high auto-sensing port count and ports-on-demand flexibility, the Brocade 5300 is an ideal solution as a fan-out switch from a director core, or as the core switch in a fabric. The Brocade 5300 satisfies demanding Reliability, Availability, and Serviceability (RAS), performance and scalability requirements of an enterprise switch while delivering interoperability and ease-of-use advantages found only in the Brocade product family. The Brocade 5300 is the latest enterprise offering from the Brocade family of entry-to-enterprise products, and offers the following features and capabilities:

- Up to 80 auto-sensing ports of high-performance 8 Gbps technology in a single domain.
- Ports On Demand scaling from 48 to 64 or 80 ports.
- Full 1:1 subscription on all 80 ports at 8 Gbps.
- 1, 2, 4 and 8 Gbps auto-sensing Fibre Channel switch and router ports.
- FICON and FICON Control Unit Port ready.
- Fibre Channel Routing (FCR) service, which provides improved scalability and fault isolation, along with multi-vendor interoperability through the optional Integrated Routing license.
- Two hot-swappable, redundant power supply FRUs.
- Three hot-swappable fan FRUs in an N+1 configuration to provide hardware-redundant cooling.
- Universal ports that self-configure as E, F, M or FL ports. Ex_Ports are activated on a per port basis with the optional Integrated Routing license.
- An RJ45 Ethernet management port, in conjunction with EZSwitchSetup, that supports switch IP address discovery and configuration, eliminating the need to attach a serial cable to configure the switch IP address and greatly increasing the ease of use.
- USB port that provides storage for firmware updates, output of the **supportSave** command and storage for configuration uploads and downloads.

1 Port side of the Brocade 5300

- A system motherboard that features a Freescale MPC8548 Reduced Instruction Set Computer (RISC) CPU running at 1.3 GHz with integrated peripherals, and that provides high performance with low power consumption.
- Inter-Switch Link (ISL) Trunking (licensable), which allows up to eight ports (at 1, 2, 4, or 8 Gbps speeds) between a pair of switches combined to form a single, logical ISL with a speed of up to 64 Gbps (128 Gbps full duplex) for optimal bandwidth utilization and load balancing.
- Dynamic Path Selection (DPS), which optimizes fabric-wide performance and load balancing by automatically routing data to the most efficient available path in the fabric.
- Rack-mount design using existing rail kits (fixed, sliding, and mid-mount/Telco rail kits) on a 19" EIA rack.
- Industry-leading extended distance support, which enables native Fibre Channel extension greater than 590 km (366 miles).
- Brocade Small Form-Factor Pluggable (SFP) or SFP+ optical transceivers that support any combination of Short Wavelength (SWL), Long Wavelength (LWL), or Extended Long Wavelength (ELWL) optical media among the switch ports.
- Unicast, multicast (255 groups), and broadcast data traffic type support.
- Brocade Fabric Operating System (FOS), which delivers distributed intelligence throughout the network and enables a wide range of value-added applications including Brocade Advanced Web Tools and Brocade Zoning. Optional Fabric Services include: Adaptive Networking with QoS, Brocade Extended Fabrics, Brocade Enhanced Group Management, Brocade Fabric Watch, ISL Trunking, Integrated Routing, and End-to-End Performance Monitoring (APM).
- Port-to-port latency minimized to 2100 nanoseconds through the use of cut-through frame routing at 8 Gbps.
- Extensive diagnostics and system-monitoring capabilities for enhanced high Reliability, Availability, and Serviceability (RAS)
- The Brocade EZSwitchSetup wizard that makes SAN configuration a three-step point-and-click task.

Port side of the Brocade 5300

The port side of the Brocade 5300 includes the system status LED, console port, Ethernet port and LEDs, USB port, and Fibre Channel ports and the corresponding port status LEDs.

[Figure 1](#) shows the port side of the Brocade 5300.

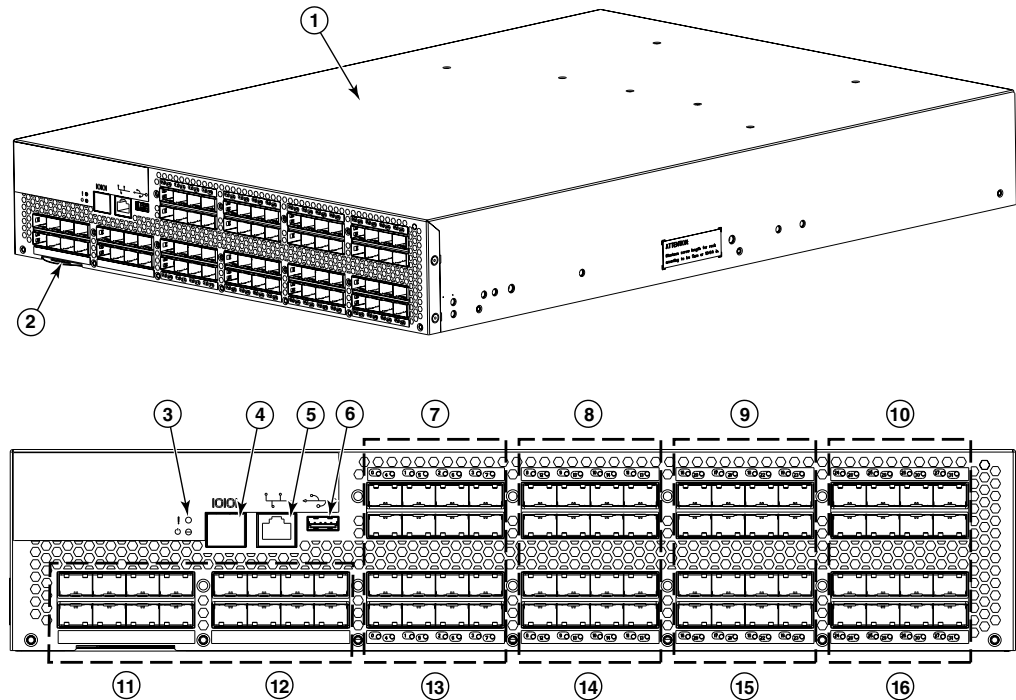


FIGURE 1 Port side view of the Brocade 5300

- | | | | |
|---|---------------------------|----|----------------|
| 1 | Brocade 5300 | 9 | FC ports 16-23 |
| 2 | Switch ID pull-out tab | 10 | FC ports 24-31 |
| 3 | System status LED (top) | 11 | FC ports 32-38 |
| | System power LED (bottom) | 12 | FC ports 40-47 |
| 4 | Console port | 13 | FC ports 48-55 |
| 5 | Ethernet port | 14 | FC ports 56-63 |
| 6 | USB port | 15 | FC ports 64-71 |
| 7 | FC ports 0-7 | 16 | FC ports 72-79 |
| 8 | FC ports 8-15 | | |

Non-port side of the Brocade 5300

Figure shows the non-port side of the Brocade 5300, which contains the power supplies (including the AC power receptacle and AC power switch) and fans.

1 Ports on Demand license

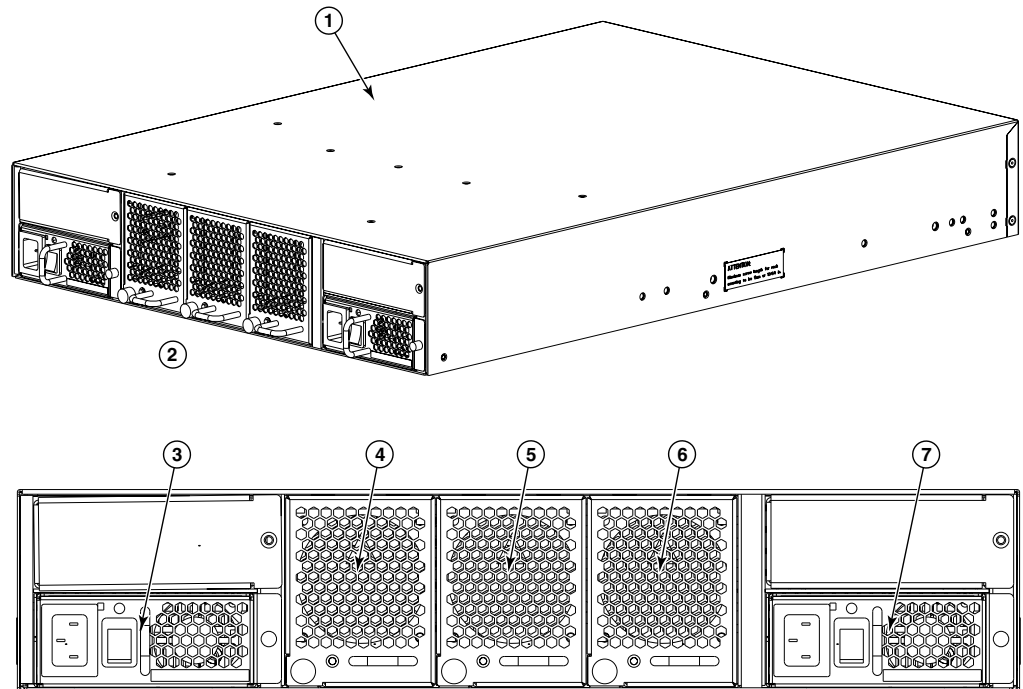


FIGURE 2 Non-port side of the Brocade 5300

- | | | | |
|---|-------------------------|---|-----------------|
| 1 | Brocade 5300 | 5 | Fan assembly #2 |
| 2 | Non-port side of switch | 6 | Fan assembly #1 |
| 3 | Power supply #2 | 7 | Power supply #1 |
| 4 | Fan assembly #3 | | |

Ports on Demand license

The Brocade 5300 has 80 ports. By default, ports 0-47 are enabled. As your needs increase, you can activate unlicensed ports by purchasing and installing the Brocade Ports on Demand (POD) optional licensed product. After it has been installed, the license appears in the **licenseShow** command output as *Ports on Demand license*.

To install a Ports on Demand license, you can either use the supplied license key or generate a license key. Typically the switch is shipped with a paper pack that specifies the transaction key to use with the Software License Keys link. Use this transaction key on the Brocade Web site at www.brocade.com/licensekeys and follow the instructions to generate the key. You can also use this site to generate other license keys for your switch.

After you have installed the license keys, you must enable the ports. You can do so without disrupting switch operation by using the **portEnable** command on each port individually. Alternatively, you can disable and re-enable the switch to activate all ports simultaneously.

For detailed information on enabling additional ports using the Ports on Demand license, refer to the *Fabric OS Administrator's Guide*.

Brocade Inter-Switch Link (ISL) Trunking

Brocade ISL Trunking is optional software that allows you to create trunking groups of ISLs between adjacent switches. Each eight port group on the Brocade 5300 can be used as a trunking group. For more information about Brocade ISL Trunking, see the *Fabric OS Administrator's Guide*.

1 Brocade Inter-Switch Link (ISL) Trunking

Brocade 5300 Installation and Configuration

In this chapter

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- [Installing a standalone Brocade 5300](#) 9
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Items included with the Brocade 5300

The following items are included with the standard shipment of the Brocade 5300. When you open the Brocade 5300 packaging, verify that these items are included in the package and that no damage has occurred during shipping:

- The Brocade 5300 switch, containing three fan assemblies and two power supplies
- One accessory kit, containing the following items:
 - Serial cable with an RJ-45 connector
 - 6 ft. Power Cord
 - Rubber feet, required for setting up the switch as a standalone unit
 - Brocade Family Doc CD
 - *Brocade 5300 QuickStart Guide*
 - EZSwitch Setup CD

Installation and safety considerations

You can install the Brocade 5300 switch in the following ways:

1. As a standalone unit on a flat surface.
2. In an EIA cabinet using a fixed-rail rack mount kit. The optional fixed-rail rack mount kit can be ordered from your switch retailer.
3. In an EIA cabinet using an optional slide-rail rack mount kit. The optional slide-rail rack mount kit can be ordered from your switch retailer.
4. In an EIA cabinet using an optional mid-mount rack kit for switches. The optional mid-mount rack kit for switches can be ordered from your switch retailer.

Electrical considerations

To install and operate the switch successfully, ensure the following:

- The primary outlet is correctly wired, protected by a circuit breaker, and grounded in accordance with local electrical codes.
- The supply circuit, line fusing, and wire size are adequate, as specified by the electrical rating on the switch nameplate.
- The power supply standards provided in [Table 6, “Power Supply Specifications” on page 28](#) are met.

Environmental considerations

For successful installation and operation of the switch, ensure that the following environmental requirements are met:

- At a minimum, adequate cooling requires that you install the switch with the non-port side, which contains the air intake vents, facing the cool-air aisle.
- All equipment in the rack should force air in the same direction to avoid intake of exhaust air.
- A maximum of 102 cubic meters/hour (60 cubic feet/minute) and a minimum of 74.8 cubic meters/hour (44 cubic feet/minute) of air flow is available to the air intake vents on the non-port side of the switch.
- The ambient air temperature does not exceed 40° C (104° F) while the switch is operating.

Cabinet considerations

For successful installation and operation of the switch in a cabinet, ensure the following cabinet requirements are met:

- The cabinet must be a standard EIA cabinet.
- Plan a cabinet space that is one rack unit (1U) high; 4.45 cm (1.75 inches) high and 48.3 cm (19 inches) wide.
- Ground all equipment in the cabinet through a reliable branch circuit connection and maintain ground at all times. Do not rely on a secondary connection to a branch circuit, such as a power strip.
- Ensure that airflow and temperature requirements are met on an ongoing basis, particularly if the switch is installed in a closed or multicabinet assembly.
- Verify that the additional weight of the switch does not exceed the cabinet's weight limits or unbalance the cabinet in any way.
- Secure the cabinet to ensure stability in case of unexpected movement, such as an earthquake.

Recommendations for cable management

The minimum bend radius for a 50 micron cable is 2 inches under full tensile load and 1.2 inches with no tensile load.

Cables can be organized and managed in a variety of ways, for example, using cable channels on the sides of the cabinet or patch panels to minimize cable management. Following is a list of recommendations:

NOTE

You should not use tie wraps with optical cables because they are easily overtightened and can damage the optic fibers.

- Plan for rack space required for cable management before installing the switch.
- Leave at least 1 m (3.28 ft) of slack for each port cable. This provides room to remove and replace the switch, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.
- If you are using Brocade ISL Trunking, consider grouping cables by trunking groups. The cables used in trunking groups must meet specific requirements, as described in the *Fabric OS Administrator's Guide*.
- For easier maintenance, label the fiber optic cables and record the devices to which they are connected.
- Keep LEDs visible by routing port cables and other cables away from the LEDs.
- Use hook and loop style straps to secure and organize fiber optic cables.

Items required for installation

The following items are required for installing, configuring, and connecting the Brocade 5300 for use in a network and fabric:

- Workstation with an installed terminal emulator, such as HyperTerminal
- Unused IP address and corresponding subnet mask and gateway address
- Serial cable (provided)
- Ethernet cable
- SFPs and compatible cables, as required
- Access to an FTP server for backing up the switch configuration (optional)

Installing a standalone Brocade 5300

Perform this task to install the Brocade 5300 as a standalone unit.

1. Unpack the Brocade 5300 and verify the items listed on [“Items included with the Brocade 5300”](#) on page 7. Verify the items are present and undamaged.
2. Apply the adhesive rubber feet. Applying the rubber feet onto the switch helps prevent the switch from sliding off the supporting surface.
 - a. Clean the indentations at each corner of the bottom of the switch to ensure that they are free of dust or other debris that might lessen the adhesion of the feet.
 - b. With the adhesive side against the chassis, place one rubber foot in each indentation and press into place.
3. Place the switch on a flat, sturdy surface.
4. Provide power to the switch as described in [“Providing power to the switch”](#) on page 10.

ATTENTION

Do not connect the switch to the network until the IP address is correctly set. For instructions on how to set the IP address, see [“Brocade 5300 configuration”](#)

Cabinet installation for a Brocade 5300

Follow the installation instructions shipped with the appropriate rack mount kit:

- To install the switch into a fixed-rail rack, refer to the *Fixed Rack Mount Kit Installation Procedure*.
- To install the switch into a slide-rail rack, refer to the *Slide Rack Mount Kit Installation Procedure*.
- To install the switch into mid-mount rack, refer to the *Mid-Mount Rack Mount Kit (Switch) Installation Procedure*.

Brocade 5300 configuration

Once you have set up the Brocade 5300 in a rack or as a standalone switch, it is time to give it power and a basic configuration. If you are going to use the Brocade 5300 in a single-switch setup, you can use EZSwitchSetup to complete the basic configuration.

See the *EZSwitchSetup CD*, included with the Brocade 5300 for more information. You can also use the *Brocade 5300 Quick Start Guide*.

If you do not want to use EZSwitch Setup, follow the instructions in the rest of this section.

Providing power to the switch

Perform the following steps to provide power to the Brocade 5300.

1. Connect the power cords to both power supplies, and then to power sources on separate circuits to protect against AC failure. Ensure that the cords have a minimum service loop of 6 in. available and are routed to avoid stress.
2. Power on the power supplies by flipping both AC switches to the “1” symbol. The power supply LEDs display amber until POST is complete, and then change to green. The switch usually requires from 1 to 3 min to boot and complete POST.

ATTENTION

Power is supplied to the switch as soon as the first power supply is connected and turned on.

3. After POST is complete, verify that the switch power and status LEDs on the left of the port side of the switch are green.

Creating a serial connection

You will perform all configuration tasks in this guide using a serial connection.

Complete the following steps to create a serial connection to the switch.

1. Connect the serial cable to the serial port on the switch and to an RS-232 serial port on the workstation.

If the serial port on the workstation is RJ-45 instead of RS-232, remove the adapter on the end of the serial cable and insert the exposed RJ-45 connector into the RJ-45 serial port on the workstation.

2. Open a terminal emulator application (such as HyperTerminal on a PC, or TERM, TIP, or Kermit in a UNIX environment), and configure the application as follows:

- In a Windows environment:

Parameter	Value
Bits per second	9600
Databits	8
Parity	None
Stop bits	1
Flow control	None

- In a UNIX environment, enter the following string at the prompt:

```
tip /dev/ttyb -9600.
```

If ttyb is already in use, use ttya instead and enter the following string at the prompt:

```
tip /dev/ttya -9600
```

Switch IP address

You can configure the Brocade 5300 with a static IP address, or you can use a DHCP (Dynamic Host Configuration Protocol) server to set the IP address of the switch. DHCP is enabled by default. The Brocade 5300 supports both IPv4 and IPv6.

Using DHCP to set the IP address

When using DHCP, the Brocade 5300 obtains its IP address, subnet mask, and default gateway address from the DHCP server. The DHCP client can only connect to a DHCP server that is on the same subnet as the switch. If your DHCP server is not on the same subnet as the Brocade 5300, use a static IP address.

Setting a static IP address

1. Log into the switch using the default password, which is password.
2. Use the **ipaddrset** command to set the Ethernet IP address.

If you are going to use an IPv4 IP address, enter the IP address in dotted decimal notation as prompted.

```
Ethernet IP Address: [192.168.74.102]
```

If you are going to use an IPv6 address, enter the network information in semicolon-separated notation as prompted.

```
switch:admin> ipaddrset -ipv6 --add 1080::8:800:200C:417A/64
```

```
IP address is being changed...Done.
```

3. Complete the rest of the network information as prompted.

```
Ethernet Subnetmask: [255.255.255.0]
Ethernet IP Address: [192.168.74.102]
Ethernet Subnetmask: [255.255.255.0]
```

4. Enter off to Disable DHCP when prompted.

```
DHCP [OFF]: off
```

Date and time settings

The Brocade 5300 maintains the current date and time inside a battery-backed real-time clock (RTC) circuit. Date and time are used for logging events. Switch operation does not depend on the date and time; a Brocade 5300 with an incorrect date and time value still functions properly. However, because the date and time are used for logging, error detection, and troubleshooting, you should set them correctly.

Time zones

You can set the time zone for the switch by name. You can also set country, city or time zone parameters.

If the time zone is not set with the new options, the switch retains the offset time zone settings. The **tsTimeZone** command includes an option to revert to the prior time zone format. For more information about the **--old** option, see the *Fabric OS Command Reference*.

You can set the time zone for a switch using the **tsTimeZone** command. The **tsTimeZone** command allows you to perform the following tasks:

- Display all of the time zones supported in the firmware
- Set the time zone based on a country and city combination or based on a time zone ID such as PST

The time zone setting has the following characteristics:

- You can view the time zone settings. However, only those with administrative permissions can set the time zones.
- The **tsTimeZone** setting automatically adjusts for Daylight Savings Time.
- Changing the time zone on a switch updates the local time zone setup and is reflected in local time calculations.
- By default, all switches are in the GMT time zone (0,0). If all switches in a fabric are in one time zone, it is possible for you to keep the time zone setup at the default setting.
- System services that have already started will reflect the time zone changes only after the next reboot.
- Time zone settings persist across failover for high availability.

Local time synchronization

You can synchronize the local time of the principal or primary fabric configuration server (FCS) switch to a maximum of eight external network time protocol (NTP) servers. To keep the time in your SAN current, it is recommended that the principal or primary FCS switch has its time synchronized with at least one external NTP server. The other switches in the fabric will automatically take their time from the principal or primary FCS switch.

All switches in the fabric maintain the current clock server value in non-volatile memory. By default, this value is the local clock server <LOCL> of the principal or primary FCS switch. Changes to the clock server value on the principal or primary FCS switch are propagated to all switches in the fabric.

When a new switch enters the fabric, the time server daemon of the principal or primary FCS switch sends out the addresses of all existing clock servers and the time to the new switch. If a switch with v5.3.0 or later has entered the fabric it will be able to store the list and the active servers; pre-5.3.0 Fabric OS switches will ignore the new list parameter in the payload and will update only the active server address.

If the active NTP server configured is IPv6, then distributing the same in the fabric will not be possible to switches earlier than v5.3.0 because IPv6 is supported for Fabric OS version 5.3.0 and later. The default value LOCL will be distributed to pre-5.3.0 switches.

The **tsClockServer** command accepts multiple server addresses in either IPv4, IPv6, or DNS name formats. When multiple NTP server addresses are passed, **tsClockServer** sets the first obtainable address as the active NTP server. The rest are stored as backup servers that can take over if the active NTP server fails. The principal or primary FCS switch synchronizes its time with the NTP server every 64 seconds.

Setting the date

1. Log into the switch using the default password, which is password.
2. Enter the **date** command, using the following syntax:

```
date "mmddHHMMyy"
```

The values are:

- mm is the month; valid values are 01 through 12.
- dd is the date; valid values are 01 through 31.
- HH is the hour; valid values are 00 through 23.
- MM is minutes; valid values are 00 through 59.
- yy is the year; valid values are 00 through 99 (values greater than 69 are interpreted as 1970 through 1999, and values less than 70 are interpreted as 2000-2069).

```
switch:admin> date
Fri Sep 29 17:01:48 UTC 2007
switch:admin> date "0927123007"
Thu Sep 27 12:30:00 UTC 2007
switch:admin>
```

Setting time zones

You must perform the procedure on *all* switches for which the time zone must be set. However, you only need to set the time zone once on each switch, because the value is written to nonvolatile memory.

Use one of the two following procedures to set the time zone.

The following procedure describes how to set the current time zone using `timezone_fmt` mode to Central Standard time.

1. Log into the switch using the default password, which is password.
2. Enter the **tsTimeZone** command as follows:

```
switch:admin> ts timezone [--interactive]/ [, timezone_fmt]
```

Use **timezone_fmt** to set the time zone by Country/City or by time zone ID, such as PST.

The following example shows how to change the time zone to US/Central.

```
switch:admin> ts timezone
Time Zone : US/Pacific
switch:admin> ts timezone US/Central
switch:admin> ts timezone
Time Zone : US/Central
```

The following procedure describes how to set the current time zone using interactive mode to Pacific Standard Time.

1. Type the **tsTimeZone** command as follows:
- ```
switch:admin> ts timezone --interactive
```
2. You are prompted to select a general location.
- ```
Please identify a location so that time zone rules can be set correctly.
```
3. Enter the appropriate **number** or **Ctrl-D** to quit.
 4. At the prompt, select a **country location**.
 5. At the prompt, enter the appropriate **number** to specify the time zone region or **Ctrl-D** to quit.

Synchronizing local time using NTP

Perform the following steps to synchronize the local time using NTP.

1. Log into the switch using the default password, which is password.
2. Enter the **tsClockServer** command:

```
switch:admin> ts clockserver "<ntp1;ntp2>"
```

where *ntp1* is the IP address or DNS name of the first NTP server, which the switch must be able to access. The second *ntp2* is the second NTP server and is optional. The operand "<ntp1;ntp2>" is optional; by default, this value is LOCL, which uses the local clock of the principal or primary switch as the clock server.

```
switch:admin> ts clockserver
LOCL
switch:admin> ts clockserver "132.163.135.131"
```

```
switch:admin> tsclockserver  
132.163.135.131  
switch:admin>
```

The following example shows how to set up more than one NTP server using a DNS name:

```
switch:admin> tsclockserver "10.32.170.1;10.32.170.2;ntp.localdomain.net"  
Updating Clock Server configuration...done.  
Updated with the NTP servers
```

Changes to the clock server value on the principal or primary FCS switch are propagated to all switches in the fabric.

2 Brocade 5300 configuration

Brocade 5300 Operation

In this chapter

• Powering the Brocade 5300 on and off.	17
• LED activity interpretation.	17
• POST and boot specifications.	22
• Interpreting POST results	23
• Brocade 5300 Maintenance.	23
• Brocade 5300 Management	26

Powering the Brocade 5300 on and off

Complete the following steps to power the Brocade 5300 on.

1. Connect one or both power cords to the power connectors on the power supplies and to a power source
2. Set the AC power switches to “I”.

Power is supplied to the switch as soon as the first power supply is connected and powered on.

The switch runs POST by default each time it is powered on; it can take up to several minutes to boot and complete POST.

To power the Brocade 5300 off, power off both power supplies by setting each AC power switch to “O”. All devices are returned to their initial state the next time the switch is powered on.

LED activity interpretation

System activity and status can be determined through the activity of the LEDs on the switch.

There are three possible LED states: no light, a steady light, and a flashing light. The lights are green or amber.

Sometimes, the LEDs flash either of the colors during boot, POST, or other diagnostic tests. This is normal; it does not indicate a problem unless the LEDs do not indicate a healthy state after all boot processes and diagnostic tests are complete.

Brocade 5300 LEDs

The Brocade 5300 has the following LEDs:

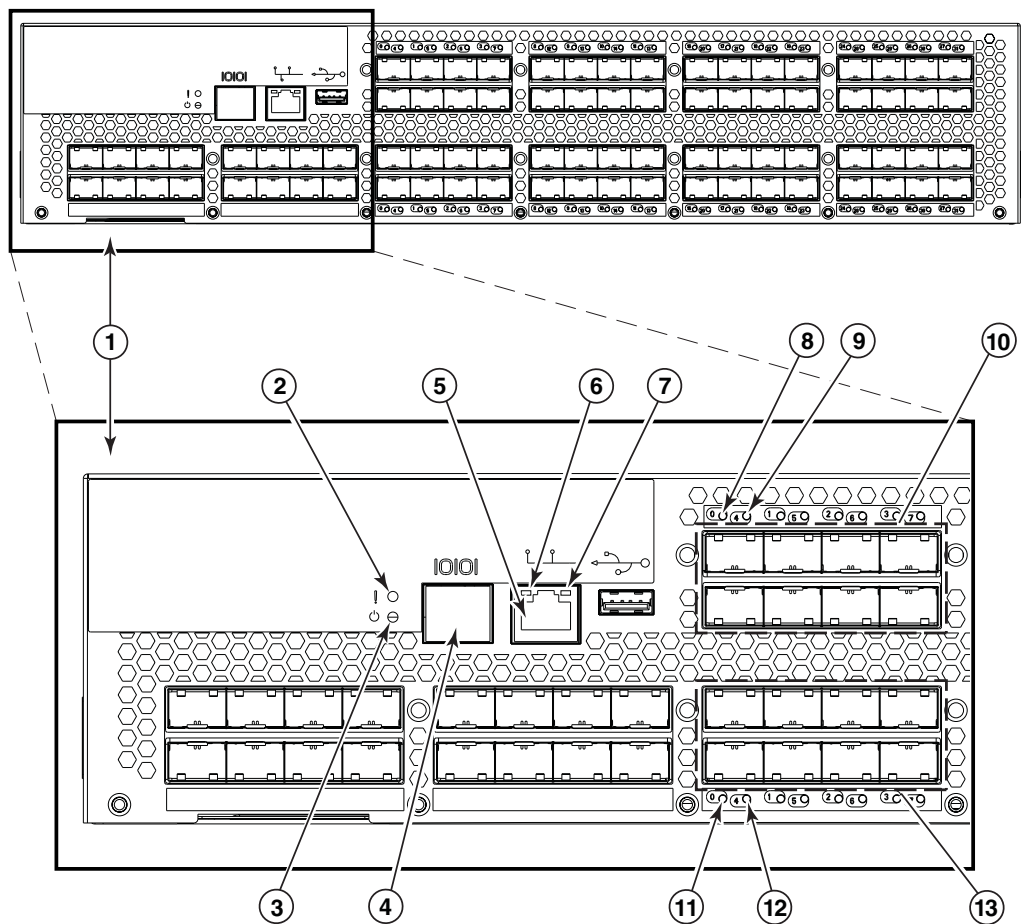
- One system status LED (above) on the left side.
- One power status LED (below) on the left side.

3 LED activity interpretation

- Two Ethernet Port LEDs
- One port status LED for each port on the switch. These LEDs are arrayed below each pair of Fibre Channel ports. The port LEDs are located in the array in the same relative positions as the ports.
- One power supply LED above the AC power switch on each power supply on the non-port side of the switch
- One fan status LED at the bottom of each fan assembly on the non-port side of the switch

LED locations

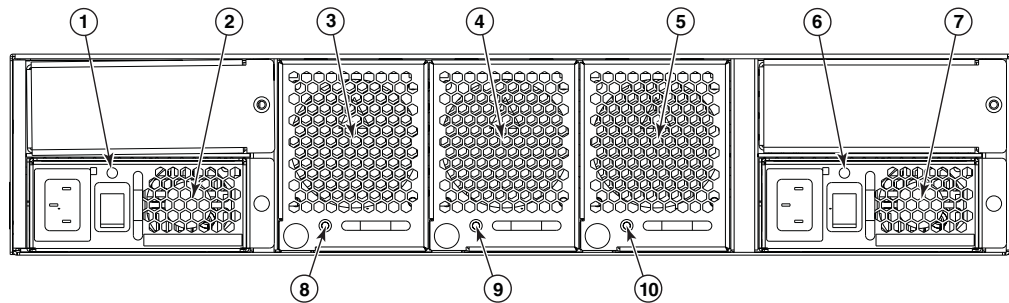
Figure 3 shows the port side of the Brocade 5300.



- | | |
|----------------------|---------------------------------|
| 1 Brocade 5300 | 8 FC port status LED (port 0) |
| 2 System status LED | 9 FC port status LED (port 4) |
| 3 System power LED | 10 FC ports (0 through 7) |
| 4 Console port | 11 FC port status LED (port 48) |
| 5 Ethernet port | 12 FC port status LED (port 52) |
| 6 Ethernet speed LED | 13 FC ports (53 through 55) |
| 7 Ethernet link LED | |

FIGURE 3 LEDs on Port Side of Brocade 5300

Figure 4 shows the non-port side of the switch.



- | | |
|------------------------------|-------------------------------|
| 1 Power supply #2 status LED | 6 Power supply #1 status LED |
| 2 Power supply #2 | 7 Power supply #1 |
| 3 Fan assembly #3 | 8 Fan assembly #3 status LED |
| 4 Fan assembly #2 | 9 Fan assembly #2 status LED |
| 5 Fan assembly #1 | 10 Fan assembly #1 status LED |

FIGURE 4 LEDs on non-port side of Brocade 5300

LED patterns

Table 1 describes the LEDs and their actions on the port side of the switch.

TABLE 1 Port side LED patterns during normal operation

LED name	LED color	Status of hardware	Recommended action
Power Status	No light	System is off or there is an internal power supply failure.	Verify the system is powered on (power supply switches to “1”), the power cables attached, and your power source is live. If the system power LED is not green, the unit may be faulty. Contact your switch service provider.
	Steady green	System is on and power supplies are functioning properly.	No action required.
System Status	No light	System is off or there is no power.	Verify the system is on and has completed booting.
	Steady green	System is on and functioning properly.	No action required.
	Steady amber (for more than five seconds)	Unknown state, boot failed, or the system is faulty. This LED displays steady amber during POST, this is normal and does not indicate a fault.	Perform the following steps: Connect a serial cable to the system. Reboot the system. Check the failure indicated on the system console. Contact your switch service provider.
	Flashing amber/green	Attention is required. A number of variables can cause this status including a single power supply failure, a fan failure, or one or more environmental ranges has exceeded.	Check the management interface and the error log for details on the cause of status. Contact your switch service provider.
Ethernet Speed	No light	Port speed is 10 Mbps.	No action required.
	Steady green	Port speed is 100 Mbps.	No action required.
Ethernet Link	No light	There is no link.	Verify the Ethernet cable is connected correctly.
	Steady amber	There is a link.	No action required.
	Flickering amber	There is link activity (traffic).	No action required.

TABLE 1 Port side LED patterns during normal operation (Continued)

LED name	LED color	Status of hardware	Recommended action
Port Status	No light	No signal or light carrier (media or cable) detected.	Check transceiver and cable.
	Slow flashing green (flashing in 2-second intervals)	Port is online but segmented because of a loopback cable or incompatible switch connection.	No action required.
	Fast flashing green (flashing in half-second intervals)	Port is online and an internal loopback diagnostic test is running.	No action required.
	Flickering green (steady with random flashes)	Port is online and frames are flowing through the port.	No action required.
	Steady green	Port is online, but has no traffic.	No action required.
	Slow flashing amber (flashing in 2-second intervals)	Port is disabled (because of diagnostics or the portDisable command).	Verify the diagnostic tests are not running. Re-enable the port using the portEnable command.
	Fast flashing amber (flashing in half-second intervals)	Port is faulty.	Check the management interface and the error log for details on the cause of status. Contact your switch service provider.
	Steady amber (for more than 5 seconds)	Port is receiving light or signal carrier at 4 Gbps; but is not yet online.	No action required.

Table 2 describes the LEDs on the non-port side of the switch.

TABLE 2 Non-port side LED patterns during normal operation

LED name	LED color	Status of hardware	Recommended action
Power Supply Status	No light	Power supply is not receiving power or is off.	Verify the power supply is on and seated and the power cord is connected to a functioning power source.
	Steady green	Power supply is operating normally.	No action required.
	Steady amber (for more than 5 seconds)	Power supply fault for one of the following reasons: Power supply is switched off The power cable is disconnected The power supply has failed Note: When the switch is first powered on the power supply status LED will show amber until POST has completed.	Try the following: Check the power cable connection. Verify that the power supply is powered on. Replace the power supply FRU.

TABLE 2 Non-port side LED patterns during normal operation (Continued)

LED name	LED color	Status of hardware	Recommended action
Fan Status	No light	Fan assembly is not receiving power.	Try the following: Verify the fan FRU is seated correctly. Verify the switch is powered on.
	Steady green	Fan assembly is operating normally.	No action required.
	Steady amber (for more than 5 seconds)	Fan fault for one of the following reasons: One or more of the fan(s) in the fan assembly has failed The fan FRU was disabled by the user Note: When the switch is first powered on the fan status LED will show amber until POST has completed.	Try the following: Verify the fan FRU is enabled (use the fanEnable command). Replace the fan FRU.

POST and boot specifications

When the switch is turned on or rebooted, the switch performs POST. Total boot time with POST can be several minutes. POST can be omitted after subsequent reboots by using the **fastboot** command or entering the **diagDisablePost** command to persistently disable POST.

For more information about these commands, refer to the *Fabric OS Command Reference Manual*.

POST

The success or failure results of the diagnostic tests that run during POST can be monitored through LED activity, the error log, or the command line interface.

POST includes the following tasks:

1. Conducts preliminary POST diagnostics.
2. Initializes the operating system.
3. Initializes hardware.
4. Runs diagnostic tests on several functions, including circuitry, port functionality, memory, statistics counters, and serialization.

Boot

In addition to POST, boot includes the following tasks after POST is complete:

1. Performs universal port configuration.
2. Initializes links.
3. Analyzes fabric. If any ports are connected to other switches, the switch participates in a fabric configuration.
4. Obtains a domain ID and assigning port addresses.

5. Constructs unicast routing tables.
6. Enables normal port operation.

Interpreting POST results

POST is a system check that is performed each time the switch is powered on, rebooted, or reset. During POST, the LEDs flash either amber or green. Any errors that occur during POST are listed in the error log.

Complete the following steps to determine whether POST completed successfully and whether any errors were detected.

1. Verify that the switch LEDs indicate that all components are healthy.

See [Table 1](#) and [Table 2](#) for descriptions and interpretations of LED patterns. If one or more LEDs do not display a healthy state, verify that the LEDs on the switch are not set to “beacon” by entering the **switchShow** command to detect if beaconing is active.

2. Verify that the switch prompt displays on the terminal of a computer workstation connected to the switch.

If there is no switch prompt when POST completes, press **Enter**. If the switch prompt still does not display, try opening a Telnet session or accessing the switch through another management tool. If this is not successful, the switch did not successfully complete POST. Contact your switch supplier for repair.

3. Review the switch system log for errors. Any errors detected during POST are written to the system log, accessible through the **errShow** command.

For information about all referenced commands, and on accessing the error log, refer to *Fabric OS Administrator's Guide*. For information about error messages, refer to the *Fabric OS Message Reference Manual*.

Brocade 5300 Maintenance

The Brocade 5300 is designed for high availability and low failure; it does not require any regular physical maintenance. It includes diagnostic tests and field-replaceable units, described in the following sections.

Installing an SFP

The Brocade 5300 only supports Brocade-branded SFPs. If you use an unqualified SFP, the **switchShow** command output shows the port in a Mod_Inv state. Fabric OS also logs the issue in the system error log.

Complete the following steps to install an SFP.

1. Making sure that the bail (wire handle) is in the unlocked position, place the SFP in the correctly oriented position on the port, as shown in [Figure 5](#).
2. Slide the SFP into the port until you feel it click into place; then close the bail.

NOTE

Each SFP has a 10-pad gold-plated PCB-edge connector on the bottom. The correct position to insert an SFP into the upper row of ports is with the gold edge down. The correct position to insert an SFP into the lower row of ports is with the gold edge up.

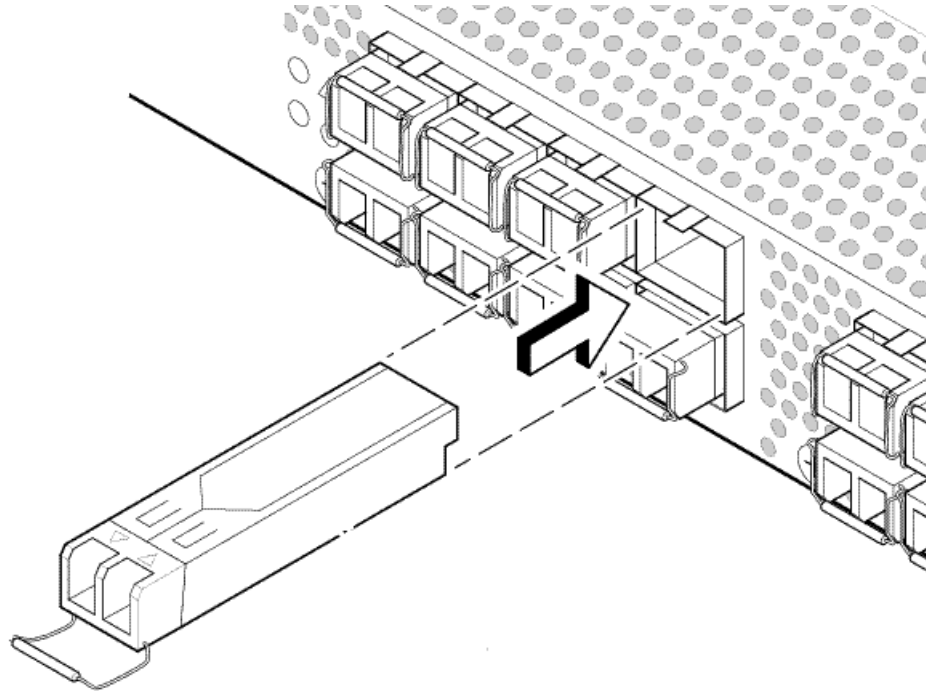


FIGURE 5 Installing an SFP in the upper row of port slot

Diagnostic tests

In addition to POST, Fabric OS includes diagnostic tests to help you troubleshoot the hardware and firmware. This includes tests of internal connections and circuitry, fixed media, and the transceivers and cables in use.

The tests are implemented by command, either through a Telnet session or through a console set up to the serial connection to the switch. Some tests require the ports to be connected by external cables, to allow diagnostics to verify the serializer/deserializer interface, transceiver, and cable. Some tests require loopback plugs.

Diagnostic tests run at link speeds of 1, 2, 4 and 8 Gbps depending on the speed of the link being tested.

NOTE

Diagnostic tests might temporarily lock the transmit and receive speed of the links during diagnostic testing.

For information about specific diagnostic tests, see the *Fabric OS Troubleshooting and Diagnostics Guide*.

Field Replaceable Units (FRUs)

You can replace the power supplies and fan assemblies on site without the use of special tools. The power supplies and fan assemblies are keyed to ensure correct orientation during installation. Installation instructions are provided with all replacement units.

Power supplies

The two power supplies are hot-swappable. They are identical and fit into either power supply slot.

Fabric OS identifies the power supplies as follows (viewing the switch from the non-port side):

- Power supply 1 on the right
- Power supply 2 on the left

Use one of the following methods to determine if you need to replace a power supply.

- Check the power supply status LED next to the On/Off switch (see [“LED locations”](#) on page 18)
- In Web Tools, click the **Power Status** icon.
- Enter the **psShow** command at the prompt to display power supply status as shown below:

```
br5300:admin> psshow

Power Supply #1 is OK
V10529, TQ2H0000030 , 60-0300031-01,X2, , SP640
, 2X,TQ2H0000
Power Supply #2 is OK
V10541, TQ2H0000189 , 60-0300031-01,X3, , SP640-2P , A
, TQ2H0000
br5300:admin>
```

For further information on replacing the power supplies, see the *Mid-Size Switch Power Supply Replacement Procedure*.

Fan assemblies

The three fan assemblies are hot-swappable. They are identical and fit into any fan assembly slot.

Each fan assembly contains two fans, identified by Fabric OS as follows (viewing the switch from the non-port side):

- Fan assembly #1 on the right
- Fan assembly #2 in the center
- Fan assembly #3 on the left

Use one of the following methods to determine if you need to replace a fan assembly.

- Check the fan status LED on the face of the fan assembly (see [“LED locations”](#) on page 18)
- In Web Tools, click the **Fan Status** icon.

- Enter the **fanShow** command at the prompt:

```
br5300:admin> fanshow
Fan 1 is Ok, speed is 4821 RPM
Fan 2 is Ok, speed is 4821 RPM
Fan 3 is Ok, speed is 4891 RPM
br5300:admin>
```

For further information on replacing the fan assemblies, see the *Brocade 5300 Fan Assembly Replacement Procedure*.

Brocade 5300 Management

You can use the management functions built into the Brocade 5300 to monitor the fabric topology, port status, physical status, and other information to help you analyze switch performance and to accelerate system debugging.

The Brocade 5300 automatically performs power-on self-test (POST) each time it is turned on. Any errors are recorded in the system error log. For more information about POST, see [“POST and boot specifications”](#) on page 22.

For information about upgrading the version of Fabric OS installed on your switch, see the *Fabric OS Administrator's Guide*.

You can manage the Brocade 5300 using any of the management options listed in [Table 3](#).

TABLE 3 Management Options for the Brocade 5300 Switch

Management Tool	Out-of-band Support	In-band Support
Command line interface (CLI) Up to two admin sessions and four user sessions simultaneously. For more information, refer to the <i>Fabric OS Administrator's Guide</i> and the <i>Fabric OS Command Reference Manual</i> .	Ethernet or serial connection	IP over Fibre Channel
Brocade Web Tools For information, refer to the <i>Web Tools Administrator's Guide</i> .	Ethernet or serial connection	IP over Fibre Channel
Standard SNMP applications For information, refer to the <i>MIB Reference Manual</i> .	Ethernet or serial connection	IP over Fibre Channel
Brocade Fabric Manager (option to purchase) For information, refer to the <i>Fabric Manager Administrator's Guide</i> .	Ethernet or serial connection	IP over Fibre Channel
Management Server For information, refer to the <i>Fabric OS Administrator's Guide</i> and the <i>Fabric OS Command Reference Manual</i> .	Ethernet or serial connection	Native in-band interface (over HBA only)
EFCM (option to purchase) For information, refer to the EFCM documentation set.	Ethernet or serial connection	IP over Fibre Channel

NOTE

To achieve in-band support for IP over Fibre Channel, the software must be run on both the HBA and the switch, and it must be supported by both the HBA and HBA driver.

Brocade 5300 Specifications

In this appendix

• Switch components	27
• Weight and physical dimensions	28
• Facility requirements	28
• Power supply specifications	28
• Environmental requirements	29
• General specifications	29
• Data transmission ranges	31
• Memory specifications	31
• Fibre Channel port specifications	31
• Serial port specifications	32
• Regulatory compliance	32

Switch components

The Brocade 5300 switch includes the following components:

- Cabinet-mountable 2U chassis designed to be mounted in a 19-in. cabinet space, with forced-air cooling that flows from the non-port side of the switch to the port side
- 80 Fibre Channel ports, compatible with short wavelength (SWL), long wavelength (LWL), and extended long wavelength (ELWL) SFP transceivers
- Two IEEE-compliant RJ-45 connector on the port side of the switch for use with a serial console and 10/100 MB Ethernet
- 80 port Link LEDs, one switch power LED, one switch status LED, two Ethernet LEDs, two power supply LEDs, and three fan LEDs
- 2 universal AC power supplies with AC switches and built-in fans
- 3 fan assemblies containing two fans each. The fans have two speeds, which are set automatically and cannot be modified. They default to high speed upon boot, then switch to low speed as Fabric OS comes online, returning to high speed only as required.

Weight and physical dimensions

[Table 4](#) lists the weight and dimensions of the Brocade 5300.

TABLE 4 Physical specifications

Dimension	Value
Height	2U or 8.6 cm (3.4 in.)
Depth	61 cm (24 in.)
Width	42.8 cm (16.8 in.)
Weight (with two power supplies, three fan assemblies, and zero SFPs installed)	15.6 kg (34.4 lb)

Facility requirements

[Table 5](#) provides the facilities requirements that must be met for the Brocade 5300.

TABLE 5 Facility Requirements

Type	Requirements
Electrical	<ul style="list-style-type: none"> Primary AC input 100-240 VAC, 2.0A, 47-63 Hz; switch autosenses input voltage Adequate supply circuit, line fusing, and wire size, as specified by the electrical rating on the switch nameplate Circuit protected by a circuit breaker and grounded in accordance with local electrical codes <p>Refer to Table 6 on page 28 for complete power supply specifications.</p>
Thermal	<ul style="list-style-type: none"> A minimum air flow of 79.8 cubic meters/hour (47 cubic ft/min.) available in the immediate vicinity of the switch Ambient air temperature not exceeding 40° C (104° F) while the switch is operating
Cabinet (when rack-mounted)	<ul style="list-style-type: none"> Two rack units (2U) in a 48.3 cm (19-inches) cabinet All equipment in cabinet grounded through a reliable branch circuit connection Additional weight of switch not to exceed the cabinet's weight limits Cabinet secured to ensure stability in case of unexpected movement

Power supply specifications

The power supplies are universal and capable of functioning worldwide without voltage jumpers or switches. They meet IEC 61000-4-5 surge voltage requirements and are autoranging in terms of accommodating input voltages and line frequencies. Each power supply has a built-in fan for cooling, pushing air towards the port side of the switch.

[Table 6](#) lists the power supply specifications for the Brocade 5300.

TABLE 6 Power Supply Specifications

Specification	Value
Inlet	C13
Maximum output of one power supply	300 Watts

TABLE 6 Power Supply Specifications

Specification	Value
Nominal system DC power consumption	260 Watts
Input voltage	85-264 VAC
Input line frequency	47-63HZ
BTU rating	1313 BTU/hr
Inrush current	Maximum of 38A for period of 10-150mS
Input line protection	Both AC lines are fused

Environmental requirements

Table 7 lists the acceptable environmental ranges for both operating and nonoperating (such as during transportation or storage) conditions.

TABLE 7 Environmental requirements

Condition	Acceptable during operation	Acceptable During Non-Operation
Ambient Temperature	0° to 40° C 32° to 104° F	-25° to 70° C -13° to 158° F
Humidity	10% to 85% RH non-condensing, at 40° C (104° F), with maximum gradient of 10% per hour	10% to 90% RH non-condensing, at 70° C (158° F)
Altitude	0 to 3 km (10,000 feet) above sea level	0 to 12 km (40,000 feet) above sea level
Shock	20 G, 6 ms, half-sine wave	33 G, 11 ms, 3/eg Axis
Vibration	0.5 G, 5-500 Hz	2.0 G, 5-500 Hz
Air flow	High speed 9000 RPM 102 CMH (60 CFM) Low speed 6000 RPM 74.8 CMH (44 CFM)	None required.

General specifications

Table 8 lists the general specifications for the Brocade 5300.

TABLE 8 General specifications

Specification	Description
Configurable port types	F_Port, FL_Port, E_Port, EX_Port, and M_Port
System architecture	Nonblocking shared-memory switch
System processor	Freescale MPC8548 x 1.3GHz
ANSI Fibre Channel protocol	FC-PH (Fibre Channel Physical and Signalling Interface standard)
Modes of operation	Fibre Channel Class 2 and Class 3
Fabric initialization	Complies with FC-SW-3 Rev. 6.6
FC-IP (IP-over-Fibre Channel)	Complies with FC-IP 2.3 of FCA profile

A General specifications

TABLE 8 General specifications

Specification	Description
Aggregate switch I/O bandwidth	1280 Gbps if all 80 ports are running at 8 Gbps, full duplex
Port-to-port latency	Less than 2100 nanoseconds with no contention (destination port is free)

Table 9 lists the electromagnetic compatibility (EMC) for the Brocade 5300.

TABLE 9 EMC specifications

Country	Safety	EMC
United States	Bi_Nat UL/CSA 60950-1 1st Ed or latest	ANSI C63.4
Canada	Bi_Nat UL/CSA 60950-1 1st Ed or latest	ICES-003 Class A
Japan		CISPR22 and JEIDA (Harmonics)
European Community	EN60950-1 or latest	EN55022 and EN55024
Australia/New Zealand		EN55022 or CISPR22 or AS/NZS CISPR22
Argentina	IEC60950-1 or latest	
Russian Federation	IEC60950-1 or latest	51318.22-99 and 51318.24.99
Korea		KN22 and KN24
China (PS only)	GB4943-2001 and GB9254-1998 or latest	GB17625.1-2003 or latest
Taiwan (PS only)	CNS 14336(94) or latest	CNS 13438(95) or latest

Data transmission ranges

Table 10 provides the data transmission ranges for different cable types and port speeds.

TABLE 10 Data transmission ranges

Port Speed	Cable Size (microns)	Short Wavelength (SWL)	Long Wavelength (LWL)	Extended Long Wavelength (ELWL)
1 Gbps	50	500 m (1,640 ft) (OM2) 860 m (2,821 ft) (OM3)	NA	NA
	62.5	300 m (984 ft)	NA	NA
	9	NA	10 km (6.2 mi)	80 km (50 mi)
2 Gbps	50	300 m (984 ft) (OM2) 500 m (1,640 ft) (OM3)	NA	NA
	62.5	150 m (492 ft)	NA	NA
	9	NA	10 km (6.2 mi)	80 km (50 mi)
4 Gbps	50	150 m (492 ft) (OM2) 380 m (1,246 ft) (OM3)	NA	NA
	62.5	70 m (230 ft)	NA	NA
	9	NA	10 km (6.2 mi)	NA
8 Gbps	50	50 m (164 ft) (OM2) 150 m (492 ft) (OM3)	NA	NA
	62.5	21 m	NA	NA
	9	NA	10 km	NA

Up to 500 km at 1G is supported when using long distance transport system such as DWDM.

Memory specifications

The Brocade 5300 has three types of memory devices:

TABLE 11 Brocade 5300 memory specifications

Type	Size
Boot flash	4 MB
Compcat flash	1 GB
Main memory (DDR2 SDRAM)	1 GB

Fibre Channel port specifications

The Fibre Channel ports in the Brocade 5300 are compatible with SWL, LWL, and ELWL SFP transceivers. The strength of the signal is determined by the type of transceiver in use.

The ports meet all required safety standards. For more information about these standards, see [“Regulatory compliance”](#) on page 32.

The ports are capable of operating at 1, 2, 4, or 8 Gbps and are able to autonegotiate to the maximum link speed.

Serial port specifications

The serial port is located on the port side of the switch. The Brocade 5300 uses an RJ-45 connector for the serial port. An RJ-45 to DB9 adaptor cable is also provided with the switch.

NOTE

To protect the serial port from damage, keep the cover on the port when not in use.

The serial port can be used to connect to a workstation to configure the switch IP address before connecting the switch to a fabric or IP network. The serial port's parameters are fixed at 9600 baud, 8 data bits, and no parity, with flow control set to None.

[Table 12](#) lists the serial cable pinouts.

TABLE 12 Serial cable pinouts

PIN	Signal	Description
1	Not supported	NA
2	Not supported	NA
3	UART1_TXD	Transmit data
4	GND	Logic ground
5	GND	Logic ground
6	UART1_RXD	Receive data
7	Not supported	NA
8	Not supported	NA

Regulatory compliance

This section describes the regulatory compliance requirements for the Brocade 5300. It contains:

- [“FCC warning \(US only\),”](#) next
- [“MIC statement \(Republic of Korea\)”](#) on page 33
- [“VCCI statement Japan”](#) on page 33
- [“Power cords \(Japan Denan\)”](#) on page 33
- [“BSMI statement \(Taiwan\)”](#) on page 33
- [“CE statement”](#) on page 34
- [“Canadian requirements”](#) on page 34
- [“Laser compliance”](#) on page 34
- [“RTC battery”](#) on page 34
- [“Electrical safety”](#) on page 35
- [“Regulatory certifications”](#) on page 35

FCC warning (US only)

This equipment has been tested and complies with the limits for a Class A computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

MIC statement (Republic of Korea)

사용자 안내문 : A 급기기

이 기기는 업무용으로 전자파 적합 등록을 받은 기기
이오니, 판매자 또는 사용자는 이점을 주의하시기
바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에
서 비업무용으로 교환하시기 바랍니다.

VCCI statement Japan

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance might arise. When such trouble occurs, the user might be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Power cords (Japan Denan)



注意 - 添付の電源コードを他の装置や用途に
使用しない

添付の電源コードは本装置に接続し、使用する
ことを目的として設計され、その安全性が確認
されているものです。決して他の装置や用途に
使用しないでください。火災や感電の原因とな
る恐れがあります。

BSMI statement (Taiwan)

The BSMI Statement is applicable to Brocade 5300 power supplies.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

CE statement

ATTENTION

This is a Class A product. In a domestic environment, this product might cause radio interference, and the user might be required to take corrective measures

The standards compliance label on the Brocade 5300 contains the CE mark which indicates that this system conforms to the provisions of the following European Council directives, laws, and standards:

- Electromagnetic Compatibility (EMC) Directive 2004/108/EEC
- Low Voltage Directive (LVD) 2006/95/EC
- EN50082-2/EN55024:1998 (European Immunity Requirements)
 - EN61000-3-2/IEIDA (European and Japanese Harmonics Spec)
 - EN61000-3-3

Canadian requirements

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations, ICES-003 Class A.

Laser compliance

This equipment contains Class 1 laser products and complies with FDA Radiation Performance Standards, 21 CFR Subchapter I and the international laser safety standard IEC 825-2.

ATTENTION

Use only optical transceivers that are qualified by Brocade Communications Systems, Inc. and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 825-2. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.

RTC battery

ATTENTION

Do not attempt to replace the real-time clock (RTC) battery. There is danger of explosion if the battery is incorrectly replaced or disposed of. Contact your switch supplier if the real-time clock begins to lose time.

Electrical safety

ATTENTION

This switch might have more than one power cord. To reduce the risk of electric shock, disconnect both power cords before servicing.

ATTENTION

Connect the power cord only to a grounded outlet.

ATTENTION

This product is designed for an IT power system with phase-to-phase voltage of 230V. After operation of the protective device, the equipment is still under voltage if it is connected to an IT power system.

Regulatory certifications

Table 13 lists the EMC compatibility for the Brocade 5300.

TABLE 13 EMC (electromagnetic compatibility)

Country	Safety	EMC
United States	Bi_Nat UL/CSA 60950-1 1st Ed or latest	ANSI C63.4
Canada	Bi_Nat UL/CSA 60950-1 1st Ed or latest	ICES-003 Class A
Japan		CISPR22 and JEIDA (Harmonics)
European Community	EN60950-1 or latest	EN55022 and EN55024
Australia/New Zealand		EN55022 or CISPR22 or AS/NZS CISPR22
Argentina	IEC60950-1 or latest	
Russian Federation	IEC60950-1 or latest	51318.22-99 and 51318.24.99
Korea		KN22 and KN24
China (PS only)	GB4943-2001 and GB9254-1998 or latest	GB17625.1-2003 or latest
Taiwan (PS only)	CNS 14336(94) or latest	CNS 13438(95) or latest

Environmental regulation compliance

This section describes the “China RoHS” environmental regulatory compliance requirements for the Brocade 5300 switch.

China RoHS

The contents included in this section are per the requirements of the People's Republic of China-Management Methods for Controlling Pollution by Electronic Information products.

遵守环境法规

中国 **RoHS**

本节中包含的内容都遵守了中华人民共和国《电子信息产品污染控制管理办法》的要求。

Environmental protection use period (EPUP) disclaimer

In no event do the EPUP logos shown on the product and FRUs alter or expand that warranty that Brocade provides with respect to its products as set forth in the applicable contract between Brocade and its customer. Brocade hereby disclaims all other warranties and representations with respect to the information contained on this CD including the implied warranties of merchantability, fitness for a particular purposes and non-infringement.

The EPUP assumes that the product will be used under normal conditions in accordance with the operating manual of the product.

环保使用期限 (EPUP) 免责声明:

EPUP 标志不会出现在产品和 FRU 的改装产品中, 也不会对 Brocade 所提供的相关产品保修条款 (该保修条款在 Brocade 及其客户间达成的适用合同中列出) 进行增补。对于此 CD 上包含的相关信息, 如适销性、针对特定用途的适用性和非侵权性的暗示保证, Brocade 在此郑重声明本公司对于与上述信息相关的所有其他保证和陈述概不负责。EPUP 假设在“产品操作手册”中注明的常规条件下使用该产品。

TS/HS dual language sheet

In accordance with China's Management Measures on the Control of Pollution caused by Electronic Information products (Decree No. 39 by the Ministry of Information Industry), the following information is provided regarding the names and concentration level of Hazardous substances (HS) which may be contained in this product.

TABLE 14 China ROHS hazardous substances/toxic substances (HS/TS) concentration chart

Name of the Component	Hazardous/Toxic Substance/Elements					
	Lead (PB)	Mercury (Hg)	Cadium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Fibre Channel Switch	X	0	0	0	0	0
Fan, Blower assemblies	X	0	0	0	0	0
PCBA cards	X	0	0	0	0	0
Power Supply kit	X	0	0	0	0	0

TABLE 14 China ROHS hazardous substances/toxic substances (HS/TS) concentration chart

Name of the Component	Hazardous/Toxic Substance/Elements					
	Lead (PB)	Mercury (Hg)	Cadium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
SFPs (optical cable connectors)	X	0	0	0	0	0
Sheet Metal	X	0	0	0	0	0
Chassis Assembly	X	0	0	0	0	0
Mechanical brackets and Slides	X	0	0	0	0	0
Slot Filler	X	0	0	0	0	0
Cable management tray	X	0	0	0	0	0
Cable Comb	0	0	0	0	0	0
Cables and power cords	0	0	0	0	0	0
Replacement Doors	X	0	0	0	0	0
Software/ Documentation CDs	0	0	0	0	0	0

X indicates that the concentration of such hazardous/toxic substance in all the units of homogeneous material of such component is higher than the SJ/T11363-2006 Requirements for Concentration Limits.

A Environmental regulation compliance

O indicates that no such substances are used or that the concentration is within the aforementioned limits.

CHINA ROHS 有害物质/有毒物质(HS/TS)限量列表

有毒与有害物质或元素的名称及含量

根据中国的<<电子信息产品污染控制管理办法>> (信息产业部第 39 号令), 本公司提供以下有关产品中可能含有的有害物质(HS)的名称及含量水平的信息。

主要部件名称	有害/有毒物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
光纤通道交换机	X	O	O	O	O	O
风扇/冷却组装件	X	O	O	O	O	O
线路板部件	X	O	O	O	O	O
USB 闪存器	O	O	O	O	O	O
电源	X	O	O	O	O	O
 SFP (光纤接头)	X	O	O	O	O	O
钣金件	X	O	O	O	O	O
机箱部件	X	O	O	O	O	O
机械支架及滑轨	X	O	O	O	O	O
插槽填充物	X	O	O	O	O	O
电缆整理盘	X	O	O	O	O	O
梳状线缆	O	O	O	O	O	O
 线束及电源线	O	O	O	O	O	O
替换门	X	O	O	O	O	O
软件/文档光盘	O	O	O	O	O	O

X 表示此类部件内同质材料中的有害/有毒含量高于 SJ/T11363-2006 的限量要求。

O 表示未使用此类物质或其含量低于上述限量要求。

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